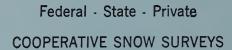
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Do not assume content reflects current scientific knowledge, policies, or practices.



Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"



for

Platte and Arkansas Drainage Basins

Ву

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

As of MAY 1, 1951



FEDERAL-STATE COOFERATIVE

SNOW SURVEY AND IRRIGATION

WATER SUPPLY FORECASTS

FOR

PLATTE-ARKANSAS RIVER BASINS

Report Prepared

by

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and

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WATER SUPPLY OUTLOOK PLATTE-ARKANSAS DRAINAGE BASIN

May 1, 1951

Snow accumulation to April 1 was above normal on these watersheds except for the Southern tributaries of the Arkansas. During March the increase in snow water content was about average. On the South Platte and its tributaries, snow cover is well above normal for this date. On many courses the snow water content is a maximum of record since snow surveys were started in 1936. On the headwaters of the North Platte in Colorado and Wyoming snow cover is slightly above normal. Precipitation at valley elevations has been deficient for several months and soil moisture conditions are fair to poor in most districts. Except for the large reservoirs on the North Platte, the storage in most irrigation reservoirs is below last year and the past ten-year average

CHEYEMME RIVER

The water supply outlook for the irrigated areas near the Black Hills in South Dakota is not favorable at the end of the season. Snow cover in mountain areas has been much below normal throughout the winter months. Snow in mountain areas has melted at this time and stream flow has been above average during the past 10 days. Runoff as the result of snow melt is practically complete for this season. Soil moisture conditions are reported as fair to good as of this time. Storage in Belle Fourche reservoir is now 103,000 acre-feet as compared to 141,000 acre-feet a year ago. In the Angostura reservoir there is now 34,000 acre-feet in storage.

NORTH PLATTE RIVER

On the Sweetwater River in western Wyoming the snow accumulation to date is about 110 percent of normal. Similar conditions also exist on the North Platte in Wyoming and around North Park in Colorado. On Snowy Range and Rabbit Ears Pass the snow cover is well above normal. Elsewhere on the Upper North Platte watershed the snow cover is normal or slightly above normal. In the valley areas of eastern Wyoming and western Nebraska soil moisture conditions are reported as fair. Valley precipitation has been deficient. Stream flow is reported as about normal. Irrigation water supplies are assured below the major reservoirs in Wyoming. Total storage in these four reservoirs is now 1,735,000 acre-feet as compared to 1,790,000 acre-feet a year ago. This is a noar record and is near three times the past ten year average. Storage in Kingsley and Sutherland reservoirs in Nebraska now totals 1,800,000 acre-feet which is slightly less than a year ago.

On the Laramie River the snow cover is well above that on the North Platte because of heavy snow cover on the Snowy Range. Soil moisture conditions in the Laramie and Wheatland areas are reported as fair to good as a result of recent precipitation. Storage in Wheatland Reservoir is now 52,000 acre-feet as compared to 55,000 acre-feet a year ago.

Name of the Control o A CONTRACTOR OF THE PROPERTY O the state of the s

SOUTH PLATTE RIVER

The irrigation water supply outlook for the South Platte and its tributaries is very favorable as of this date. Snow cover in mountain areas has been well above normal throughout the winter season. Cool temperature during April has retarded snow melt and stream flow is below normal. Except for the Cacha la Poudre record or near record snow water content was measured on nearly all of the snow courses on May 1, 1951. If the temperature remains cool and precipitation is normal for the first two weeks of May the peak flow of the South Platte tributaries will be relatively high. Total flow is expected to be much above last year and may possibly exceed the flow during the snow melt season in 1949. In respect to normal the snow cover on South Platte tributaries is as follows: Poudre 140 percent; Big Thompson 145 percent; Saint Vrain 165 percent; Boulder 175 percent; Clear Creek 160 percent; and South Flatte above Denver 140 percent. The snow cover at modium elevations is near twice normal. This should provide above normal runoff during May. Storage in irrigation reservoirs is still much loss than last year and slightly less than the past ten-year average. Soil moisture conditions throughout the valley are reported as only fair.

Water tables in the South Platte are lower than at this time a year ago in most places. The average lowering is between one and two feet but in a number of places it reached as much as 6 feet. The places registering the maximum lowering were those where pumping was greatest and where surface irrigation supplies were less than normal. Maximum declines took place along the South Platte near Henderson and Gilerest which are between Denver and Greeley. There were similar declines near Wellington in the Cache la Foudre drainage, south of Wiggins on the Bijou and lower Kiowa and on the Beaver near Gary, about twolve miles south of Brush.

ARKANSAS RIVER

Snow cover on the Arkansas watershed is well above normal from Monarch Pass to Frement Pass as of May 1. The extreme deficiency in snow cover still remains on the headwaters of the southern tributaries, the Huerfano, Cucharas and Purgatoire Rivers. The summer flow of these streams will probably be less than last year and near a minimum of record. The summer flow of the Arkansas at Salida and Pueblo should be well above last year and the past ten year average. Stream flow is reported as below average. Soil moisture conditions are described as poor throughout the valley. Precipitation has been deficient for several months. Except for the Twin Buttes Reservoir in southeastern Colorado carryover storage of irrigation water is very low.

Water tables along the Arkansas River between Fewler and Rocky Ford are 1 to 2 feet lower than a year ago. Little change occurred between Pueblo and Fewler. A lowering of from 1 to 2 feet occurred on the Fountain near Fountain.

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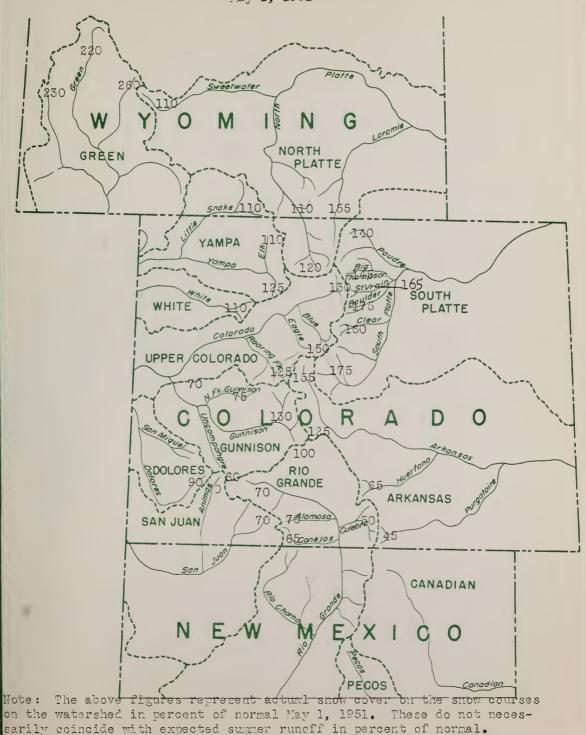
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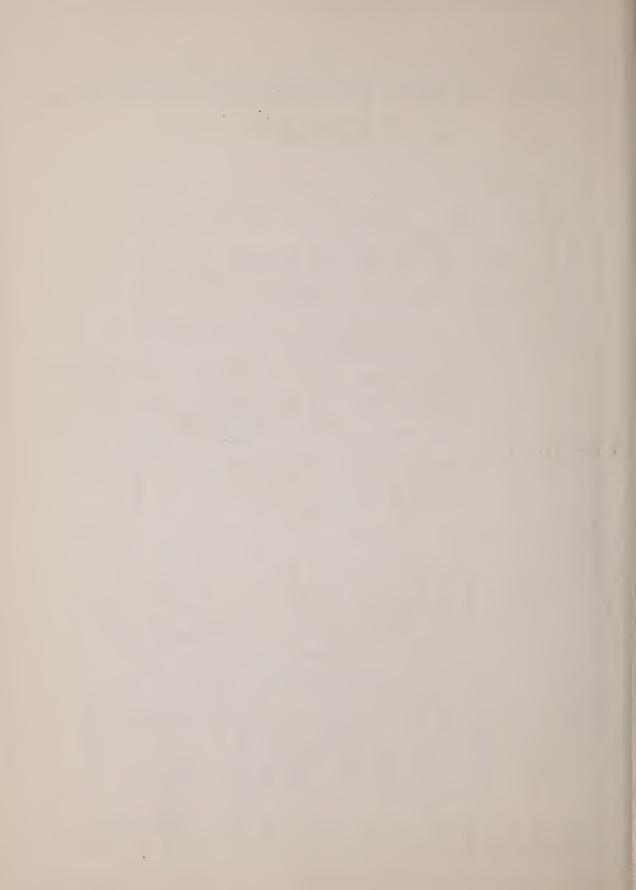
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 WATER CONTENT OF SNOW ON THE WATERSHEDS OF PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

> In Percent of Normal May 1, 1951





PLATTE ARKANSAS DRAINAGE BASINS STREAM ELOW FORECASTS, May 1, 1951

		Armil-Co	Arril-Sent Incl Streamflow	Thosan Flore Acres Foot	
		77-T-T-14	Contract of the contract of th	- 1	
Basin and Stream	Forecast 1951	1950	Measure 1949	Measured Kunoff 1948	10-year Avg. 1940-1949
NORTH PLATTE					
Sweetwater at Alcova	000,09	162,000	87,000	000,001	000,999
North Platte at Saratoga	750,000	000,879	000,066	421,000	601,000
Wedicine Bow near Hanna	135,000	94,000	000,191	91,000	111,000
Laramie at Jelm	120,000	26,c00	113,000	83,000	93,000
Laramie at Lookout	135,000	67,000	124,000	61,000	80,000
SOUTH FLATTE					
Poudre at Canon	300,000	186,000	323,000	201,000	245,000
Big Thompson at Drake	145,000*	104,000	172,000	95,000	113,000
Saint Vrain at Lyons	130,000	65,000	000,611	000,119	87,000
Boulder at Orodell	85,000	39,000	61,000	45,000	54,000
Clear Creek at Golden	200,000		185,000	136,000	145,000
ARKANSAS					
Arkansas at Salida	450,000	305,000	1,50,000	422,000	359,000
Arkansas at Pueblo	425,000	249,000	512,000	493,000	431,000
Cucharas at La Veta	10,000		16,000	17,000	19,000
Purgatoire at Trinidad	20,000		63,000	68,000	70,000
*Excluding Diversions					

Andrews Andrews Common Commo					
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STATUS OF RESERVOIR STORAGE, PLATTE-ARKANSAS BASIN, May 1, 1951

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May 1, 1951	10-year Avg. 1940-1949	12.7	7.9	4.8	5.2	2.1	2.8	4.5	3.4	ω. 	17.4	8.0	3.3	7.1	80.8	8,99	15.7	24.1	14.9	14.2	9.4	16.7	6.6	50.3	31.7	34.5	24.3	61.4	22.5
STORAGE About	1948	14.7	٧.	10.8	6.1	2,5	2.7	٥٠,٠	4.2	10.3	30.1	9.3	7.6	12.7	81.9	79.0	15.5	28.5	20.8	17.8	2.4	21.0	12.5	59.4	34.5	35.4	31.2	67.3	21.7
NH	1949	11.7	7.6	6.2	7.6	0.0	2.3	3.8	2.3	2.4	21.9	8.0	0.7	6.1	81.9	56.8	14.4	26.9	15.0	12.5	2.0	20.3	12.2	55.4	33.3	33.4	27.4	51.6	22.7
ACRE FEET	1950	11.8	8,1	9.6	7.7	0.0	2.8	11.3	7,8	N.	26.1	8.2	1.7	9.1	81.9	56.4	15.4	25.3	17.6	11.0	2.1	21.0	15.2	56.8	33.3	34.4	28.4	68.9	21.7
THOUSANDS	1951	11.7	6.2	7.1	4.2	0.0	1.9	4.9	0.7	2.7	7.9	8.7	7.0	3.4	71.9	26.1	17.1	25.0	10.2	9.6	3.7	20.3	10.9	7.97	25.4	34.7	21.2	6009	22.2
USABLE CAPACITY	(Thous.	18.6	2.6	11.6	8.2	6.4	8,8	34.3	0.8	14.3	1,40	9.5	5.4	12.7	81.9	79.0	18.9	32,2	24.4	18.5	10.3	33.0	20.6	57.5	37.7	35.4	32.8	70.0	28,2
RESERVOIR		Windsor	Cache la Poudre	-	Terry Lake	Halligan	Chamber's Lake	Cobb Lake	Black Hollow	Lake Loveland	Boyd Lake	Lone Tree	Mariano	Union	Eleven Mile	Cheeseman	Marston	Barr Lake	Milton	Standley	Marshall	Antero	Horse Creek	Riverside	Empire	Jackson Lake	Prewitt	Point of Rocks	Julesburg
BASIN AND STREAM		MISSOURI RIVER Pondre River	# #	= =	=======================================	=	= =	=	=	Big Thompson River	= =	5 0-	=======================================	St. Vrain River	South Platte River	= =	=	=======================================	=======================================	11 11	= = = = = = = = = = = = = = = = = = =	= =====================================	11 11	11 11 11	=======================================	= =====================================	11 11	=	=

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RESERVOIR CO	II)	Sutherland Kingsley Minatare Alcova Seminoe Guernsey Pathfinder Wheatland Twin Lakes Sugar Loaf Clear Greek Meredith Horse Greek Adobe Greek Cucharas Two Buttes John Martin Great Plains Jenes Sugar Loaf Model Jenes Greek Adobe Adobe Greek Cucharas John Martin	Belle Fourche 15
BASIN AND STREAM		North Platte River """""""""""""""""""""""""""""""""""	Cheyenne River

*Some for shorter periods

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SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA VITH THAT OF PREVIOUS YEARS BY WATERSHEDS

LATTE-ARKANSAS DRAINAGE BASINS

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	1951 Water Content	in percent of	1950					28	51	136	173	100	77	17.	13	185	130		202	
	Wate.	perc	Fourteen		*		m f vrneskyri				arri Anagara	P1.1-P1.071	in tellerable flye	br y mha n			to control			••
	1951	ir	Four	year	Avg. *		y to not decades	97	112	157	176	91	177	남	166	174	158	M.c	131	
			1951	20, 6 2000 (14		Percent		32	38	35	31	77	36	38	38	으	بر بر		34	
(S		Snow Density	1950			Percent		듸	39	34	32	22	34	20	37	37	38		35	
PLATTE-ARKANSAS DRAINAGE BASINS		Snow I	Fourteen 1950	year	Avg.*	Percent		37	36	35	29	30	36	34	36	37	34		33	
SAS DRAI	Number	Courses	ri	Average		4		7	10	ω	m		9	2	Н	~	~		10	
-ARKAN			-1			Ine		13.7	20.9	17.4	70,	1.1	17.8	26.4	22.4	20.2	25.1		10.9	
ATTE		Water Content	1 1950	***********		In		23.6	20,8	12.8	びび	7,7	12.4	16.8	14.5	10.9	19.3	h manager	5.4	
		Water	Fourteen 1950 195	year	Avg.*	In.		14.0	18.7	11,1	7.5	2.4	12.6	18,2	13.5	11.6	15.9		8,3	**Above Denver.
			1951			In		1,2,8	55.2	50.2	30.5	2002	19.5	70.0	59.3	50.2	71.5		32.3	Above
		epth	1950			In		57.0	53.4	38.6	17.2	2,0	37.0	55.8	39.0	29.3	51.3		25.0 15.3	
		Snow Depth	Fourteen 1950	ar	Avg.*			38.0	47.9	31, 7	18,7	7.9	35.1	53.8	37.7	31.0	1,6.4		25.0	riods.
			FO	year	AV		7-98-90-	,	River	F4	River**		Sandarya	River*	ver	.¥.	Clear Creek 46.4 51.3 71.5 1	alliga t.e. dy	e	*Some for shorter periods.
		HEDS					RIVER	ater	Platte	e Rive	Platte	reek	River	nosduc	ain Ri	r Gree	reek		IS RIV	or sh
		WATERSHEDS					PLATTE RIVER	Sweetwa	North 1	Larami	South	Crow C	Poudre	Big The	St, Vr	Boulder	Clear (APKANSAS RIVER	*Some

PRECIPITATION DATA*

		May 1, 1951	751		
WAMEDStreet	te v e c	Precipitation	Departure	Precipitation	Departure
WAI EIGHER	SIAIL	October I to	TLOH		11011
		April 30	Normal	April	Normal
		Inches	Inches	Inches	Inches
North Platte	Wyoming	6.55	96°0 -	1.67	+0.03
South Platte	Colorado	5.75	-1 °34	1,43	99.0-
Arkansas	Colorado	7.09	-1.82	2.32	+0.21
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*Average selected high elevation stations

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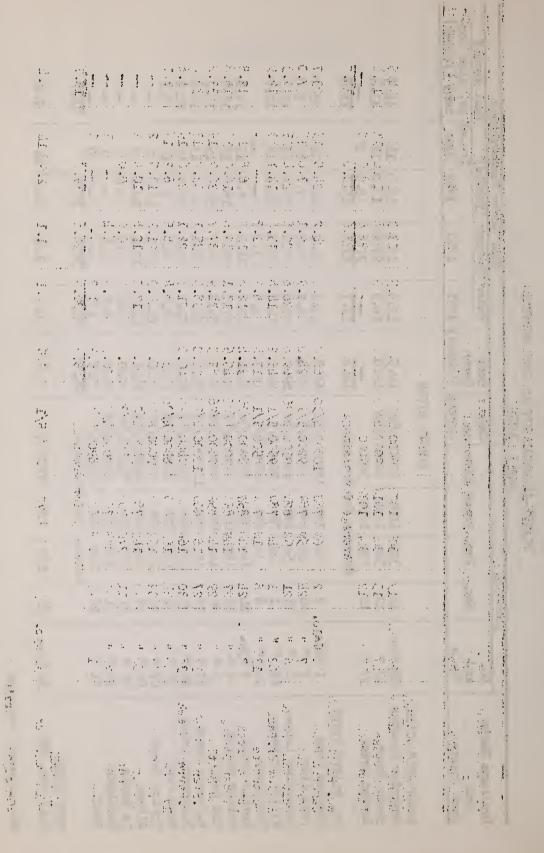
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-7PLATTE-ARKANSAS RIVERS SNOW SURVEYS
May 1, 1951

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*On adjacent drainage



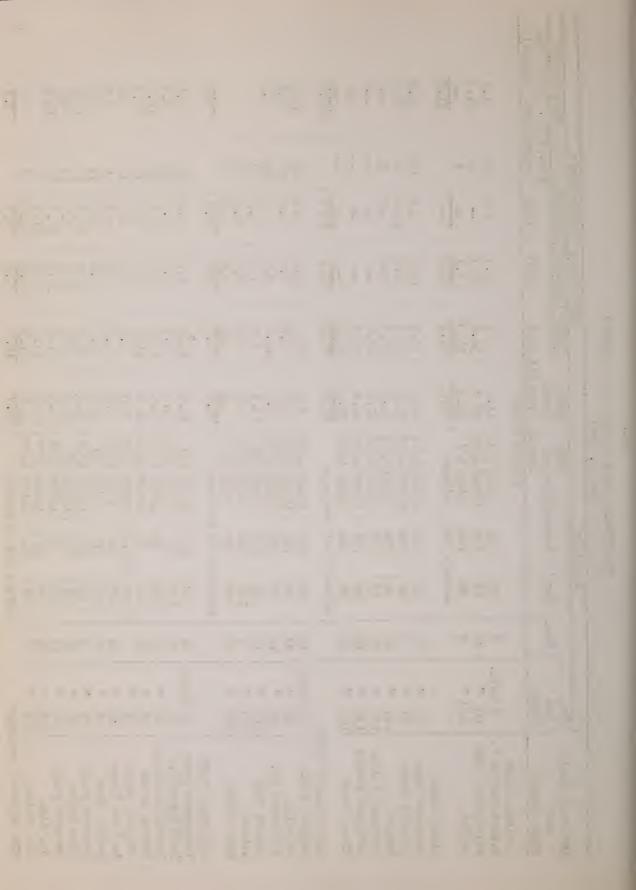
-8-PLATTE-ARKANSAS RIVERS SNOW SURVEYS May 1, 1951

		-			May 1,	1751			c	3.6	-	
		Location	on					מ	Snow cover easurement	r easur	ement	
Drainage Basin	No.					Date	Snow	Water C	Content (1	Inches)		
and	and	6	[1	ļ	of	Depth	1	1	1	Yrs. of	3
Snow Course	State	Sec.	-dw1	Range	Elev.	Survey	(Inches)	1951	1950	1949	Rec.	tent(Inches)
LARAMIE RIVER							,	•	,			
W. Port. G-P. Tun.		<u>ر</u> م	88	757	3600	4/26	29.5	9.4	3.6	0.0	14	0.1
Deadman Hill*	20 =	56	TON	75W	10200	4/29	58.5	22.7	17.4	18.9	12	16.8
Roach	8 8	rV.,	NOT	27	9800	4/28	68.1	24.6	23.2	22.0	20	20.2
McIntyre	111 "	35	TON	76W	9100	14/30	43.1	12.8	11.4	10.5	۵.	1
Brooklyn Lake	3 Wyo.	11	16N	7911	10200	17/29	96.3	36.9	27.8	27.4	77	24.5
Fox Park	יי לו	7	13N	78W	9300	4/29	29.4	10.0	7.4	5.1	15	7.7
Pole Mtn.#2%	34 "	35	15ii	72W	8700	5/1	7.51	٦,	1.1	2.9	14	2.4
Libby Lodge	35 =	59	16N	781	8700	4/30	15.7	15.8	9.2	6.9	15	2.0
Hairpin Turn	36 =	24	16N	79W	9500	17/29	56.6	19.0	15,5	12.8	15	10.8
halbany falbany	= 89			78W	0076	4/29	44.1	17.0	12.4	10.4	2	1
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Chambers Lake	= :	٥	28	2. E	0000	62/1	0 17	0,0	ب ر	2.5	구 ;	ρ. Υ΄
Big South	= m	بر ن	NO.	121	0092	4/29	ر. ا	1.5	⊢. ⊢	0.1	15	9.0
Deadman Hill	50 =	56	10N	75.	1.0200	1/29	68.5	22.7	17.4	18.9	12	16.8
Lake Irene*	= 55	ω	<u>~</u>	75.	10600	1,28	84.4	34.5	27.0	26.1	13	23.4
Hour Glass Lake	. 89	1,3	Z.	73.1	9500	4/28	6.Ct	14.6	7.0	11.5	H	7•3
Red Feather	= :	50 50	NOT	75	0006	4/28	27.9	± x c	3.5	0.0	2	•
Lost Lake	150 "		Average	for drainage	9300	62/h	100	13.0 17.0	1 61	13.0	1	761
BIG THOMPSON RIVER				3 3 1 1) (DIT		1 .		† • •	· }) - -
Lake Irene*	= 70,	∞	ZZ.	75.1	10600	1/28	84.4	34.5	21.0	26.1	13	23.4
Hidden Valley	# 56 #	53	25	75.	9550	5/1	55.5	18.3	12.5	15.6	10	12.9
Deer Ridge Longs Peak	= = =	32		73.7	9050	ר לי	22.	7.4	1.5	2.3		!!
) †		Φ	for dra	drainage	+	70.0	26.1	16.8	20.9		18.2
ST. VRAIN RIVER)					•				
Wild Basin	41 Colo.	24	N N	与 2 2 2		L/2/	59.3	22.4	14.5	16.2	بار ا	13.5
Word	110	۲ ر	N C	7.07	0000	1/7	13.0	4 7 7	- o	o c	7 -	1
	f t		(I	for drainage	5	+//	70,7	20:1	15.15	16.2		13.5
*On adjacent drainage	986	;	0	3	00000			† •	\ † †)	_	\ \ \
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PLATTE-ARKANASAS RIVERS SNO. SURVEYS

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Federal - State - Private COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"